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ABSTRACT

Summerized in this report are the developmental tasks and accomplishments of Project SPACE. An experimental program in cooperative vocational education, SPACE was devised by EdCo, an educational collaborative of seven Boston area school systems, for the purpose of offering potential dropouts in the vicinity an alternative form of education: going to school in an industrial setting. SPACE'S uniqueness lies in the fact that its 45 students receive both academic instruction and work experience in an interrelated manner. Instruction in course content is given during the morning hours while work experience is an evening event. The teacher-pupil ratio and free atmosphere prevalent in the environment allows for the special tutoring of slow students and the carrying out of independent activities by other more advanced pupils. The involvement of teachers with students does not stop in the classroom but overlaps to the work arena. SPACE is not without problems; in fact it has many, some of which are: (1) finding other sources for expanding the project should the enrollment increase, and (2) finding support should the present aid be curtailed. (SN)

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SPACE AGE COOPERATIVE EDUCATION (Project SPACE)

ECONOMIC DEVELOPMENT ADMINISTRATION
TECHNICAL ASSISTANCE PROJECT
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FINAL REPORT

Project SPACE
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Boston
Cambridge
Arlington
Lexington
Newton
Concord
Brookline

Participating companies:

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Honeywell Information Systems, Inc., Brighton
Liberty Mutual Insurance Co., Boston
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Project SPACE is an experimental program in cooperative vocational education. Devised by EdCo, an educational collaborative of seven Boston area school systems, Project SPACE was given a chance to become a reality this past year through a grant from the Economic Development Administration of the Department of Commerce. SPACE is a venture in an alternative form of education for the great number of our students who are not now profiting from the traditional high school education. It is a joint enterprise in the most comprehensive fashion: the students, both black and white, city and surburban, poor and middle class, literally go to school in industry. They take courses in a classroom in the company in the morning and work for the same company in the afternoon. Project SPACE hopes that, through an educational program uniquely relevant to their experience and through constructive work and training in business, many young people, who might otherwise leave school and fall into the wasteland of unemployment or underemployment, can secure a new lease on the future. There are now forty-five students participating in Project SPACE at three companies in Metropolitan Boston. This report is an effort to summarize the growth and development of the project through the year of the grant from EDA.

Much of the first half of the year was a series of false starts, disappointments, and frustrations. Although the initial proposal was put together by EdCo in the fall of 1969, the program was not funded until the beginning of last year. By that time, the economy of Massachusetts had deteriorated considerably. Unemployment nearly doubled, with all the communities represented in EdCo experiencing large increases. Weakness in

the economy always strikes the least skilled first and the young are those most vulnerable to fluctuations in demand for unskilled positions. Thus, the economy played a role in all the early difficulties in getting SPACE into operation.

Some companies could not afford to commit themselves to fifteen part-time employees at a time when they might be laying off other employees. Only the largest would be able to endure the strain which their share in the program would put on already tight budgets. Although companies like Polaroid recognized the value of Project SPACE and their obligation to social improvement, they were shy of risking funds for a program as yet unproven. Again, when dealing with large business concerns, there is the necessary hazard of working with an intricate bureaucracy which can dash hopes as easily as it raised them.

Project SPACE required a unique and complex collaboration between different sectors of society and it is not surprising that there were duplications of effort and conflicts of interest. The sketch of a history of negotiations with New England Telephone Company can illustrate the difficulties. The Company, especially its Urban Affairs Department, was throughout very interested in Project SPACE. They had been connected with work-study programs in their surburban offices for quite some time. Their only obstacle was the need for six months to evaluate their needs and set up a viable program within their company. Then the unions affiliated with company employees balked at the idea, but delicate negotiations continued. Finally, New England Telephone chose to take Boston students in a much more conventional program from a Boston high school.

Though there was a kind of repetition of effort in that most companies of size already had their own fairly elaborate ways of training their employees, a different sort of conflict arose at the Transportation Systems Center in Cambridge, where a new course in work study was already being contemplated. TSC recognized a definite responsibility to aid the students of their city, and were, in a sense, caught in the middle, once they were impressed by the concept of a truly cooperative education as projected in SPACE. These difficulties required formidable negotiations and managed to delay the start of the program there until early in December.

Thus, in response to the pressures of the economy and the needs of other programs, the key element in SPACE, the active presence of business became a matter of prolonged discussions and too frequent disappointments. Honeywell's Radiation Center, which displayed tremendous interest in the program from the beginning, simply needed more time to develop their ideas of curriculum, to scout out their manpower needs, and to process the approval for funding through the hierarchy of their company. As if this were not sufficient, however, the coordinator of the Honeywell program became ill and this unavoidably delayed the whole thing two months. Despite these misfortunes, the program began at Honeywell in September.

Since some of the hesitation on the part of business resulted from the anticipated cost of the program, Project SPACE sought other sources of covering the cost of paying the salaries of the students. The National Alliance of Businessmen was approached because of its established work-study contracts with a variety of companies. Also, an application for

funds under programs to train the disadvantaged was filed with the Department of Labor. For the latter, all ties with the schools of Boston had been severed and the school coordinated Neighborhood Youth Corps program ended, and SPACE seemed an excellent vehicle for helping the now neglected and disadvantaged student. At the same time it would provide money and contracts for the expansion of Project SPACE. The requirement that the students come from families with a low socio-economic status would limit Department of Labor aid primarily to inner city students. Project SPACE has similar aims of its own; of the forty-five students now in the program, half are from the inner city and another seven are from the highly urbanized city of Cambridge.

Business, though a greater source of constraint on the Project, was not alone in feeling the strain of a weakened economy. The school systems in EdCo which had promised to free teachers in equitable ratios for participation in SPACE more than two years ago, found themselves, last summer, unable to fulfill this commitment. They were in fact in the process of cutting back on new and experimental efforts designed to help the kind of unsuccessful student aimed at by Project SPACE. Rather than perpetuate this deprivation, EdCo assumed the burden of hiring and paying the teachers. A last minute grant from the State Department of Education helped prevent this problem from ruining the Project.

The difficulties facing the staff of Project SPACE during the first half of the year were primarily fiscal and administrative ones which reflected general conditions beyond the control of EdCo. Nevertheless, Project SPACE began in September with twenty-eight students at two locations, Honeywell's

Radiation Center in Lexington and Liberty Mutual Insurance Company in downtown Boston. In December, a third site for fifteen students was added at the Transportation Systems Center in Cambridge.

The format of the program is surprisingly simple, yet it allows for considerable individualization of needs and interests. The academic portion of the program extends from eight to twelve each morning in a permanent room within the plant. The twenty hours of instruction per week include the subjects necessary for a high school diploma as well as courses which meet individual requirements, special enrichment and tutoring options, and lessons which combine theoretical studies with the students' afternoon work experience. The students work in the company from one to five each afternoon, and, hopefully, their job positions will be adapted to their skills and desires. The program operates for eleven months, with the students working full time during the periods when the public school normally is closed.

If the key to beginning Project SPACE was inspiring industry participation, the corresponding key element in making SPACE function smoothly has been the teachers. They develop and direct the morning curricula. They coordinate the afternoon work training by familiarizing themselves with the jobs, maintaining dialogue with each student's supervisor, and attempting to educate the company to the needs of SPACE and its students. Most importantly, however, they must be able and willing to establish relationships with the students adapting the program to their particular needs and dealing with any problems which may arise and affect the students' involvement in the program. They must be both teacher extraordinaire and

counselor for a diverse group of dissatisfied and troubled young people. The position is challenging and demands teachers who are flexible and innovative. Nonetheless, more than sixty teachers applied for the few positions in Project SPACE. It suggests that SPACE has a broad appeal to teachers seeking new and more effective ways to get their students to learn and to be prepared to survive and succeed in the world awaiting them on graduation.

The more strictly academic aspect of the program was described in a past report:

> The topics are designed to improve students' knowledge of American History, broaden their background of literature, give them a basic foundation of math and science principles and introduce them to other disciplines with which they may be unfamiliar (i.e., sociology, psychology and anthropology).

The specific curricula and teaching methods devised to accomplish this reflect the diverse needs and weak backgrounds of most of the students. Although many are quite bright and talented, traditional programs have done little to develop their abilities. Typical of the agility such a situation demands on the part of the teacher is the mathematics period at the newest part of SPACE, the classroom at the U.S. Transportation Systems. The skills of the students range from solid knowledge of geometry to inability to handle simple arithmetic concepts. Since it is a very pratically oriented program, those with the minimal fundamental skills receive the most attention. The class is divided into groups according to their ability and during their hour of mathematics work by themselves, in small tutorials, and, occasionally, in individual sessions. Bringing together students from city and suburbs, black and white, poor and middle class, created an obvious problem in

required academic areas. The teachers, who were, in part, chosen for the breadth of their knowledge, have worked out a solution which resembles the 'open' type classroom which has been frequently advocated recently as a means of handling large groups efficiently and to instruct those with outstanding 'learning' problems. It does require interest and cooperation from the student in return for a curriculum adapted to his specific needs and abilities.

Most of the yound people attracted to Project SPACE have, in one form or another, been disenchanted or 'alienated' from their local high school. Many have developed a rigid antipathy for what seemed arbitrary and unrealistic learning experiences, lessons like relics from a different world. Others are simply looking for the kind of education which will prepare them for the jobs which they know must await them upon leaving school. The latter need a 'new direction' themselves as well as academic work whose content is more appropriate to their immediate future. The dropouts and near dropouts, those who for various reasons were not even able to 'sneak by' in their schools, often cannot learn unless the content, however conventional, is presented in a fashion more suited to their own experience. Thus, the staff and teachers in Project SPACE have developed courses whose form and matter are more relevant to the realities of life for its students. These students will not be excited by a heavy tome on the history of prose style. They may be attracted to wonder out style through a book which they may choose to read in another course for a different purpose. Or the demands of their afternoon job may encourage them to improve their ability to handle the written language. The teacher, since he or she is involved in the entire program of each student, can coordinate these needs and capitalize

on the distinctive abilities and interests of each student. Again, the rows and columns of numbers in a mathematics book can take on new vividness when seen in the contex of a draftsman's table. If the work supervisor has been appraised of the level and movement of his student's academic activities, he can take advantage of the concreteness of his work to reinforce and stimulate the student.

It is often desirable to 'seduce' the economically and educationally neglected student into realizing that learning is both an essential for survival in an urban world and a pleasure in itself. The latter depends on developing success situations where the student will find himself thinking critically and applying his thoughts in real contexts. The class at the TSC office recently had an opportunity to talk with an American Indian in an informal atmosphere as part of its current Social Studies project. Soon, they, like the other classes, will be making field trips related to the subject matter of their class work. They will visit museums and other places which have displays of Indian materials. Such trips provide a relief to the 'stuffiness' attendant on any classroom and a chance to develop group cohesion as well as being a source of ideas and information to be brought into classroom discussion. Often these field trips can awaken a sense that learning can be both vital and enjoyable. A setting which maximizes a student's particular interest and needs will more easily attract the interest of the <u>whole</u> student. His interest in American Indians can be a inducemnt for him to begin to express himself to others and can possibly generalize itself into concerns about history, social groupings, race, etc., and, perhaps, back again to an ability to relate better to other kinds of people.

Constructing and controlling an educational enviroment with such potential again falls to the lot of the teacher. He must seek ways to fulfill individual needs, as, for instance, one girl's desire to learn Italian, while still meeting the demands of the entire group. Maintaining a good learning context requires a balancing of general structure with individual programming; the exact mixture varying with the interests and requirements of each group. With students who would be considered at least potential dropouts it has been very effective to use a contract system, where pupil and teacher work out a concrete goal which is mutually agreeable and a series of realistic steps for reaching that goal. As a result, the student can follow a well planned course without feeling that he has sacrificed his independence.

As the project develops, it is hoped that well delineated curricula relating the student's work assignments directly to his classroom work can be developed. This will require a better understanding on the part of the student regarding his own career interests as well as a more thorough knowledge of his skills and capacities. Still, such training has been done continously on an informal basis. At Honeywell, scientists have given talks about the functions of the plant and set up special experiments for the class. At USTS one supervisor went out of his way to purchase a book to help his student understand more of the theory behind his job training.

There have, of course, been general problems related to attendance and lateness. Some students had already dropped out of school and those who didn't had no reason to expect that the classroom work would be more appealing

than past experience. Attendance problems have been most noteworthy at Liberty Mutual which is not surprising in view of the fact that most of the students are from the city and knew each other before the program began. Some have skipped the morning classes but arrived on time for the moneymaking afternoon session. The usual punitive measures would be pointless in a project which deals primarily with those who did not react to such measures positively in the past. Rather, at Liberty Mutual, meetings and discussions have been held with the students and they have been given an opportunity to recognize their problem and find their own solution for it. Although it has only been in full operation for a month, there has been almost no problem with absence at U.S. Transportation Systems. At Honeywell, as a result of the greater difficulties with transportation to suburban Lexington, attendance has either been very good or nonexistent. In view of the dismal past records of these students any improvement is notable and especially when in some cases there are more hindrances to getting to school than ever before. According to the evaluation by Gordon Marker: "The fact that the program is voluntary and being attended by chronic absentees is suggestive of the vitality of the EdCo/SPACE approach. The fact that the Boston Trainees at Honeywell must leave for 'school' at 6:15 a.m. is added testimony to the interest in the program."

SPACE would not expect to make quick academic gains with these students; even so, it would still be true that the main attraction of the SPACE program lies in the afternoon employment. For many of the inner city students, the minimum wage of $1.60/hour offered at TSC is helpful in their financially pressured families. With unemployment running well over 30% among youths in their age bracket, the idea of a guaranteed summer job would be enough

to draw them into the program. For others with less obvious financial need, the jobs have a distinct economic function: to give them more money and the independence which that money must buy in suburbia. They can finish their education in a tolerable fashion and be paid for it.

Although economic freedom is probably a common substratum to the interest of the majority of students in SPACE, it would not be sufficient to make the program work for a student over a period of two or three years. Several students have talked about Project SPACE as the 'second chance.' It is also a new kind of chance. SPACE is giving them the opportunity to earn money while they work for a diploma in a unique educational process. It does, as well, give them work experience which will improve their ability to succeed in the world facing them on graduation. Although, as another result of the depressed economy, most of the available jobs reduce themselves, in one way or another, to clerical positions (and this explains the high proportion of females in the Liberty Mutual and Honeywell centers). As all parties have become more comfortable with the program it has been possible to shift students into jobs which take greater advantage of their talents and interests. A fixed procedure in all the locations is the career development conference where the personnel managers, job supervisors, teachers and EdCo staff attempt to evaluate the needs of the students and determine whether adjustments can or should be made in their work assignment. The success of these conferences has had a marked impact on the program. At Liberty Mutual, students are being rotated through jobs in a variety of fields in an effort to expose them to career possibilities beyond those bordered by a typewriter and filing cabinet. One girl has shown considerable talent

in the advertising department. If she can be induced to train her skill, she could have a promising career in promotional art. The ability to use the job experience as a direct path into future employment is dependent upon the differential between the complexities of the job and the student's skills. Although all the students at Honeywell have taken on additional responsibilities in their jobs (one boy, in particular, rapidly picking up rather remarkable soldering skills), they will become career possibilities only if the students attempt to expand their knowledge of the relevant theoretical background. In electronics this can often mean quite advanced mathematics concepts and the language skills essential to deciphering and using them. Thus, at TSC the personnel coordinator does not view that value of Project SPACE in terms of developing specific, marketable skills in the students. The Department of Labor contended that most businesses see job training as an 'apprentice' period of not more than a year and he may merely be reflecting an expectation that job trainees should move more quickly into the company. Still, he knows that, at the level of technical complexity at TSC, all skills learned on the job must be supplemented with extensive training in school programs. The 'Typical Duties' of an "Engineering Aide' indicate the nature of muct of the student's work:

> Incumbents learn basic methods, techniques, and procedures for a few simple tasks. They learn to make routine measurements, simple arithmetic computations and instrumentation readings and to record specific duties. They help others in the performance of simple tasks. Perform a variety of other duties.

For the company, the value of such jobs lies in the extent to which a disadvantaged youth can be given a stimulating, successful work experience which can later be translated into learning more negotiable skills (though he acknowledges that, were SPACE much larger, they could incorporate the necessary training over a two or three year period). It parallels the desire of the teacher to use a discussion with an American Indian as a steppingstone to an ability to handle sociological abstractions. Many of the youths in Project SPACE have been turned off by more than their local schools. They often view business as just another large inexplicable hierarchy attempting to sterlize their lives. The future is already bleak for them, and many find an outlet in obliterating it - for the moment, anyway - through drugs. Perhaps engineers also own preconceptions about longhaired students unwilling to 'bear up' under their share of the 'load.' For the personnel coordinator at TSC, bringing the neglected student together with the accomplished engineer or technician ("who often went through the same thing himself") is itself a course in self awareness and social adjustment. The job skills - punctuality, following directions, filing, etc. - are useful in all jobs and can form a solid foundation for more thorough training elsewhere. Another benefit for TSC is the added responsibility and challenge for the full-time employee whose career may need stimulation. TSC would not, then, calculate the advantages of Project SPACE only in terms of cost or measure its value as a means of providing future employees. Its success at TSC, though, is itself a measure of the viability of SPACE. The students in addition to attending innovative classes, earning money, and gaining work experience are facing new values and being exposed to new ideas. In many cases they

have come to confide in their supervisor and use his maturity as much as his job skill. Certainly this 'human component' is present at Honeywell, where several students have been asked already to continue working there after they graduate, and at Liberty Mutual where they may have already acquired skills which are valuable in an ecomony needing secretaries. In fact, some employees at Honeywell have mentioned SPACE as the most rewarding aspect of their work and as the reason for not seeking more appealing work elsewhere.

After less than five months of operation it would be difficult to assess Project SPACE in terms of its goals. At least, the kind of quantitative figures, which are always so comfortably clear, are not feasible at this stage of the program. Of course, the immense needs of the students were not revealed through attendance numbers or grades. Until students graduate into jobs or, hopefully, into specialized training programs, it will not be obvious whether such a program can both prod potential dropout students into the requisite academic success, and give them a chance to learn a marketable skill. Certainly as a pilot project, SPACE must continue to grow and expand to prove its viability. If dissemination of 'word' about a program is one measure of its expansion potential, then SPACE has triumphed. Students and aprents from the school districts participating in EdCo were very eagar to join the program back in August and besieged staff with applications. There is still a surplus of applicants: a partial result of SPACE students informing others of their satisfaction with the program. Over the Christmas vacation, most took advantage of the chance to work full time at their company. Through the demonstration of independence and the ability to 'make it' in the

world, the students can realize a sense of accomplishment which they never felt through 'school' prior to Project SPACE. It would be possible to arrange for their participation in extra curricular activities of their choice, most of these students were too disenchanted to consider such activities in the first place. Now, the chance to be a part of an experimental learning/work experience far outweighs any considerations and attachments to their old schools. They are able to meet other kids from notably different background who have surprisingly similar concerns and problems. They can learn from competent, interested adults. They can show themselves ready to face the 'real world.' Their work supervisors see Project SPACE as a bonus to their employment situations: a kind of experiment in 'relating' which can be, at once, personally gratifying and socially productive. For teachers, Project SPACE is a stiff challenge to all their skill and interest which lets them develop new teaching methods in the context of an exciting and practical program.

The initial concept of Project SPACE emphasized the job training needs which were left unmet by conventional vocational education. Students were to be 'emotionally stable' and still in school, though desirous of receiving more specific career training. In the interview process it quickly became apparent that the student most alienated from traditional education is liable to have 'problems' and that the risks involved in accepting such students in SPACE were more than balanced by the potential benefits. The rate of return on this investment, the possible formulation of a workable model for cooperative vocational education, is more than commensurate with the high risk. For these students, Project SPACE can be a reeducation to a

society they felt had left them stranded. SPACE gives them a way to succeed where it does count. It is already apparent that SPACE will be of value to traditional school programs. The curricula developed to fit the needs of SPACE students can be used to instruct other groups of alienated, unsuccessful students not involved in college preparatory courses. Although the program has not been operative long enough to have formalized ideas for curricula, several approaches toward dealing with the educational problems of these students will eventually be elaborated. One entails the formation of a course to teach the fundamental kinds of 'business skills' necessary for even minimal success in employment but which, especially in inner city students, are frequently completely absent. Another would include the tools and processes required to establish interest training groups where an employee of the host company gives a seminar on a specific problem or issue raised by the students. Another very productive technique involves the use of supervised independent study, ranging from library type research topics to group field trips, as a means of teaching and generating significant interest in the social sciences and hunanities. The students can follow a topic of their own choosing, use the media and materials they desire, and then present their results to the group as a whole. The teacher acts as both a resource person and as supervisor and attempts to guide the students' interest into broader and more complex areas. The use of modified independent study, though most often confined to academically successful students, offers the most potent and flexible form for alienated students to pursue their study, especially when it allows them to learn through acting, by going out into the community and gathering their own information. The result of this approach

would not be a conventional heirarchic curricula, but a sourcebook of ideas and procedures presented as achronicle of the activities in Project SPACE. The classroom in industry can be an effective model for a more open, experiential classroom which is able to tailor educational programs to the specifications of the students and which is firmly grounded in a situation which can be used to aid the learning process.

The 'lessons' of Project SPACE, so far, seem to confirm those drawn from other programs dealing in the problems of sectors of the school population which are usually on the periphery of a school board's attention. That there are educational needs which must be met and which exceed the resources and boundaries of traditional school systems, is clear. An approach which cuts across those boundaries and draws together different levels of society can begin to meet the problem. Project SPACE could not have found sufficient stimulating job openings and the proper students to fill them without having the freedom to use the resources of the entire metropolitan area. The mixture of races and socio-economic backgrounds in Project SPACE is one of the attractions of the program and essential to its conception of the learning process in both academics and employment. At the same time, bringing together many people who otherwise might be at odds is surely a step towards solving some of the uglier urban problems. Although it can be difficult administrative task to coordinate many communities, companies, ethnic groups, etc. (which suggests the artificiality and uselessness of some of these divisions), SPACE has demonstrated that to meet a pressing need it can produce results otherwise not attainable. Cooperation must

function at all levels of Project SPACE if it is to succeed. SPACE can possibly be a model for other joint ventures among the school systems of metropolitan Boston as well as a vital component in any metropolitan educational plan.

SPACE is a growing program. When the ratio of their students in SPACE exceeds that maintained between teacher and pupils in their own vocational classrooms, the member districts of EdCo will be able to supply teachers for Project SPACE. Other sources for expanding Project SPACE may become available. Yet without the assistance of the EDA, SPACE would still be a proposal. And unless the aid continues, SPACE will not survive. The achievement of the year of the grant, and one more difficult than ever imagined, has been to make the proposal into an operative program. As the MARKER report noted:

> ...that there has been a successful launching of Project SPACE, explicitly designed to mix blacks and whites, suburban and city students and take the schooling to the place of employment merges on the miraculous.